



OMINECA REGION

GUIDELINES FOR SPRUCE BEETLE HAUL AND MILL STRATEGIES

1 Purpose

To establish uniform procedures for minimizing the potential escape of spruce beetle adults from infested spruce logs during storage, hauling and milling operations in **suppression beetle management units** in the Omineca Region.

2 Background

The success of sanitation harvesting is contingent upon expeditious extraction, transportation and processing of beetle-infested logs before newly developed adult beetles can emerge in the forest, escape from logs on landings/roadsides, from loads in transit, or from decks in mill yards. This 3-step process is only as effective as its weakest component. If substantial beetles escape from logs during their transportation or, especially, mill yard storage, the objective of expeditious sanitation harvesting has been largely wasted. **This is only relevant in suppression beetle management units.** Guidance is provided for licensees contemplating hauling and milling of beetle-infested wood during the beetle flight.

Lengthy restrictions may not be necessary or practical for a variety of reasons and this document outlines options for increasing flexibility in hauling and milling of infested trees under certain situations. This flexibility starts with the licensee monitoring the beetle development using a relatively simple methodology in order to further reduce the “no haul window” to an approximate 6 week period. This restricted period can be further reduced to approximately 3 weeks if short-term forecasted day time temperatures are monitored.

Plans to haul and mill infested wood during the traditional “no haul” window should be formulated at least 8 weeks prior to the planned hauling. If hauling and milling activities are to be conducted in more than one district, proponent licensees need to liaise with adjacent districts. Plans should consider, as a minimum, the information outlined in sections 6 to 11. Particular attention should be paid to obtaining accurate and complete information to facilitate a risk assessment.

3 Assessing and Managing Risk

The potential benefits from hauling and milling beetle-infested wood during the flight must clearly outweigh the likelihood and magnitude of beetles escaping from logs around temporary storage areas, in transit, or especially around mills. The assessment of risk should consider an analysis of the environmental, economic and social risk of this activity. Where the risk is high, serious consideration should be given to not hauling and milling through the normal “no haul” window.

4 Potential Benefits

The reasons and benefits for hauling and milling beetle infested wood during the flight might be:

- a newly detected infestation in a previously uninfested area cannot be hauled and processed before the flight period starts. This area must have a high potential for spread wherein trap trees might not sufficiently contain emerging beetles;
- there has been an extended spring break-up and the licensee needs wood in the mill to keep it operating;
- hauling and milling during the flight leads to a net benefit in beetle management. The strategy could increase the capacity of licensees to utilize more beetle infested wood by harvesting in the season best suited for the site. Therefore, a better balance in harvesting infested summer and winter blocks is possible resulting in a net gain in beetle management;

5 Potential Risks

The likelihood and magnitude of risks should be considered for:

- economic impacts on the licensee or community, e.g., increased operating costs and increased deterioration of log and lumber quality through delays in manufacturing if the plan is not implemented;
- any operational barriers, e.g., a mill unable to process wood greater than a certain diameter that may impede the success of the operation;
- community concerns regarding past milling practices during significant infestations;
- any past beetle escape along haul routes or around mill yards. The potential spread of beetles in these areas should be heeded with consideration of the current attack status and the susceptibility of the surrounding forest;
- areas of high beetle susceptibility in sensitive land ownership categories (e.g., private land, parks, etc.) should be identified and considered, and
- how infested wood hauled out of the district will be handled.

6 Risk Assessment

An example of risk analysis is provided in Table 1.

Table 1. Example of Assessment of Risks of Hauling & Milling During Beetle Flight

Risks	Likelihood of Event	Magnitude of Consequences	Total Risks
Potential spread along: - haul route - mill yard or temporary storage area	Low Moderate	High Moderate	Moderate Moderate
Community Concerns: - problems with historic milling practices - affect of proposal on private land - loss of public trust	High Moderate Low	Low Moderate Low	Moderate Moderate Low
Licensee Concerns: - reduced revenue	Low	Low	Low

The above risks should be compared to the potential benefits of implementing the proposal:

- reduced licensee costs through increased access to summer wood;
- reduced beetle spread through improved sorting of infested wood; and
- improved licensee contingency plans to assess the risk around mill yards.

A plan to haul and mill infested wood during the flight could be made under certain conditions in order to reduce the potential moderate risks while realizing the positive benefits.

7 Contingencies and methods

- Infested logs can be marked and sorted prior to loading. Beetle-infested loads can be hauled to the mill without delay and processed expeditiously.
- No infested wood should be delivered to a mill when rapid processing cannot occur, e.g., excessive infested inventory may remain unprocessed because of a holiday.
- Harvesting, hauling and milling staff should be trained and delegated with the responsibility for ensuring the success of the plan. Clear instructions should be provided to all relevant personnel regarding the strategy.
- Scaling of infested wood should be managed in order to avoid unnecessary milling delays.

- A contingency plan should be developed as part of the risk assessment strategy to detect and treat spillover attacks within 3 km of mill yards and within 400 m (or other reasonable distance) of transportation corridors.
- If air temperature is monitored at the mill site, hauling can be suspended if flight threshold temperatures are reached (see Sect. 9).
- The licensee should track the processing times for infested timber, record the strategy's successes and failures and recommend solutions.

8 Monitoring beetle development and flight

The methods listed here should be used to monitor spruce beetle development and emergence in order to determine when the beetle flight period will occur. The companion monitoring system included in the following points is important to help distinguish the beetle flight period.

The following method describes the use of spruce beetle infested trees and Lindgren funnel traps for flight monitoring.

- Select an area of spruce trees that contain active spruce beetle brood ready to emerge from successful attack the previous year or two years previous in your operating area. For licensees that have large operating areas, monitor as close to the harvesting area as possible. Selected trees should be representative of the typical beetle attack. More than one clump of 3 trees may be necessary for larger infestations or for infestations influenced by varying elevations, aspects, or proximity to waterbodies.
- In late April, place 3 Lindgren funnel traps near the above attacked trees in order to attract the escaping beetles. All attacked trees should be harvested or treated after the monitoring period.
- Start examining the Lindgren funnel traps when canopy temperatures are nearing the flight threshold of 16°C. The hauling or storage of infested wood should be controlled when canopy temperatures near the flight threshold of 16°C and spruce beetles are identified in the Lindgren traps.
- Continue to graph the presence of adult beetles in the Lindgren funnel traps twice per week. The restrictions on hauling and milling of infested wood can stop two weeks after the beetle flight period has ended i.e. less than 30 beetles found in the traps.

9 Monitoring temperature

Determining the period of high beetle flight (in Sect. 8) will normally minimize the “no-haul/milling” window. This period can be further reduced if hauling and milling is regulated using the “**monitored temperature approach**” as per Table 2. This approach is based on the knowledge that temperatures can be accurately predicted up to 48 hours in advance by qualified weather technicians, and that spruce beetle have a flight threshold of 16°C.

Table 2. Temperature restrictions for hauling & storage of spruce beetle-infested wood

Daily maximum predicted temperature	Action
< 16° C	Store & Mill All Day
16° - 25° C	Hauling and Milling only between 2300 - 0800 hrs.
25° C +*	No hauling or milling

If the temperature is predicted to be less than 16°C on a particular day, then hauling and milling of infested wood can occur unimpeded through that day. If the temperature is predicted to range from 18° - 25° C, then hauling and milling should only occur between 2300 and 0800 hours, and no infested wood should be stored after this period. If the temperature is predicted to exceed 25° C, then no hauling or

milling of infested wood should occur on that day because 18° C can be exceeded during the night. It is important that if actual temperatures exceed predictions, particularly in the mill yard, then operations should be aligned with the actions outlined in Table 2. If the proponent uses the monitored temperature approach then air temperature needs to be monitored at the mill yard.

10 A method for licensees to monitor and track infested wood during the flight period

Licensees should consider the following information:

- a) The volumes by cutting permit and forest licence that will be hauled and milled during the flight.
- b) Document the benefits that may be derived and remember that these should clearly outweigh the risks.
- c) Consider the following factors and decide how they will be managed during the period:
 - On-block sorting and harvest management of infested wood.
 - Forest susceptibility and attack status along the haul route(s) and around the mill yard.
 - Pre-existing inventories of infested wood in the mill yard and how hauling additional infested wood will affect milling.
 - Costs to the licensee of the traditional hauling and milling calendar date restrictions.
 - Scaling of infested wood.
 - Any other relevant factors that may affect the decision.
- d) Consider how the above or any other factors combine to increase the risk of future spruce beetle spread.
- e) Clearly describe the detection and treatment measures that your company will implement within a reasonable distance of the haul route and/or around the mill yard. These measures could include procedures for truck breakdowns while hauling infested wood.
- f) Outline operational procedures and constraints that you will adopt to guide hauling and milling activities to minimize the risk throughout the flight period. Specify the methodology for monitoring the flight and explain whether or not the “monitored temperature approach” will be adopted.

11 Mitigative measures

To reduce the risk and liability of hauling and milling beetle infested wood at a processing plant during the beetle flight, the licensee may consider any of the following contingencies or combinations of them depending on the level of risk associated with the operation.

- If beetle infested wood is hauled during the beetle flight, logging truck drivers should be instructed to ensure uninterrupted transportation from the block to the mill site.
- If an interruption occurs due to a truck breakdown or for any other reason, the mill owner should be notified and treatment plans can be formulated to address the additional risk associated with the incident.
- If beetle infested wood is transported outside the forest district boundary, the forest districts enroute to, and the receiving forest district, must be consulted prior to commencement of transport to ensure relevant concerns are addressed.
- During winter operations, beetle infested wood can be sorted. Non-infested volumes can be separated for transport during the beetle flight.
- Infested wood should not be stored at storage sites or in the mill yard during the beetle flight, but should be hot-milled immediately.
- All beetle infested wood brought to mill yards should be processed prior to the beetle flight unless mitigative measures are employed.
- Any infested wood hauled during the flight should be done via the "monitored temperature approach."
- During the spruce beetle flight period, non-infested and/or non-host species should be transported and milled.

- Placing infested logs at the bottom of decks and packing them with snow can retard beetle development and “buy time” if there are excessive inventories requiring priority milling.
- Stakeholders living in proximity to mill yards and hauling corridors should be advised of the risk and probable consequences of beetle escape.
- A plan should be developed as part of the risk assessment strategy to detect and treat any spill-over attacks within 3 km of each mill yard or storage area.

The licensee should consider the varying levels of risk associated with each mill site or storage area. Use of the monitored temperature approach and an appropriate array of mitigative measures should lessen the risk of beetle escape.



For additional information on spruce beetle suppression, please contact your local FLNR office.

